AUTHOR: Zentsov, A.S., Engineer 98-58-7-13/21

TITLE: Selection of a Suitable Conventional System of Coordinates of Designing and Construction of Large Hydroelectric Power Plants (O vybore ratsional'noy sistemy koordinat pri proyektirovanii i stroitel'stve krupnykh gidroelektrostantsiy)

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1958,Nr 7,pp 42-43(USSR)

ABSTRACT: A conventional system of coordinates is usually established at the beginning of the designing and construction of large industrial constructions, hydroelectric power plants in particular. The author states that it is necessary to choose such a system in which the axis X coincides with marking axis of the line of direction. The intersection of the axis Y and the beginning of coordinates must be placed on any picket of the marking axis or at the intersection of the axis of the sluice, if there is one. This system will greatly simplify all following designing operations for all kinds of work. All the main elements of construction will then have only positive X meanings of the coordinates. There is 1 graph.

1. Power plants--Design 2. Power plants--Construction 3. Sluices --Design--Theory

Card 1/1

ZENTSOV, A.S.

ZENTSOV, A.S.; VASIL'YEV, A.P., inzhener, redaktor; FILONENKO, A.S., professor, redaktor; VORONIN, K.P., tekhnicheskiy redaktor.

[Calculating locations of vertical shafts and underground surveying in constructing hydraulic tunnels] Opyt proizvodstva orientirovaniia vertikal'nykh shakht i podzemoi poligonometrii pri sooruzhenii gidro-tekhnicheskikh tunnelei. Pod red. A.V. Vasil'eva i A.S.Filonenko. Moskva, Gos.energ. izd-vo 1955. 165 p. [Microfilm] (MLRA 9:1)
(Tunneling) (Triangulation) (Hydraulic engineering)

8(6), 14(6)

AUTHOR: Zentsov, A.S., Engineer

SOV/98-59-7-12/22

TITLE: Geodetic and Surveying Work at Hydro-Electric Sites

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 7, p 52 (USSR)

ABSTRACT: This is a discussion of proposals to introduce certain changes into the geodetic system used in the construction of hydro-electric sites, which is always preceded by complex engineering research work to determine the suitability of the terrain. An important part of the team are the surveyors, who on the instructions of the Main MVD Board for Geodesy and Cartography usually work at scales of 1:5,000 or 1:2,000. The complicated nature of the construction of hydro-electric sites is rendered even more so by the presence of underground installations, which call for a high degree of accuracy on the part of the surveyors. However, in many cases experience has shown that the accuracy was insufficient for the demands of the constructors of

Card 1/3

the projects, and thus, at the commencement of building operations the surveyors have now to make a more detailed, accurate plan of the scheme (triangulation of Classes II and III of city networks, and sometimes Class I, as in the case of the Dneprostroy project). This work requires additional funds (200, 300,000 rubles) and takes 3-5 months, since it has to be carried out by the surveying team, which is understaffed during the organizational period. It is simularly unwise to carry out underground operations without a highly accurate geodetic report first being obtained. It would therefore seem expedient to have this work carried out, for cheapness' sake, by the planning and research team to satisfy the requirements of the constructors. For large GES projects (such as the Bratsk GES) and medium-sized ones where underground installations are planned, the official triangulation of city networks Class II is recommended, while Class III is more suitable for average-sized plants with no underground installations. Due to this method a loss of

Geodetic and Surveying Work at Hydro-Electric Sites

up to 30% of the geodetic signs is possible this being inevitable in view of the frequent changes that take place in the plans of GES projects. This will somewhat raise the cost of the initial research (which should be taken into account) but since it excludes any chance of repetition it will eventually cover any additional initial costs. It also obviates the need for a large staff of surveyors, etc., during the initial period. These proposals are stated to be only valid for GES projects which are likely to be realized in the near future.

Card 3/3

ZENTSOV, A.S., inzh.

Selecting an efficient provisional system of coordinates to be used in planning and constructing large hydroelectric power stations. Gidr. stroi. 27 no.7:42-43 Jl '58. (MIRA 11:8)
(Coordinates) (Hydroelectric power stations)

ZENTSOV, Andrey Stepanovich; BELIKOV, Ye.F., red.; SHURYGINA, A.I., red.izd-va; ROMANOVA, V.V., tekhn. red.

[Geodesy in the construction of large hydroelectric power stations and their tunnels] Geodeziia pri stroitel'stve krupnykh gidroelektrostantsii i ikh tunnelei; iz opyta rabot. Moskva, Gosgeoltekhizdat, 1963. 223 p. (MIRA 16:10)
(Hydroelectric power stations) (Surveying)

AM4016087 BOOK EXPLOITATION S/

Zentsov, Andrey Stepanovich

Geodesy in construction of large hydroelectric power plants and their tunnels; based on practices (Geodeziya pri stroitel'stve krupny*kh gidroelektrostantsiy i ikh tunneley; iz opy*ta rabot) Moscow, Gosgeoltekhizdat, 63. 0223 p. illus., biblio. 3,000 copies printed.

TOPIC TAGS: geodesy, hydroelectric power plant, hydroelectric plant tunnel, mine surveying, earthwork, concrete structure, tunnel, shaft

PURPOSE AND COVERAGE: The book presents practical schemes and methods for general and detailed engineering-geodetic and mine surveying work, carried out in the construction of large open and underground hydroelectric stations and their tunnels. In the case of engineering-geodetic work, special geodetic networks for pegging out operations are described. In the case of mine surveying work, particular attention is paid to practical operating methods (especially orientation of vertical shafts with increased accuracy) and predicted and actual results of work on holing through opposing

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elements of structure. Brief information is presented on detailed engineering-geodetic work in the case of earth work, concrete, and alignment in the construction of hydraulic units. The book is intended for practicing geodeticists; mine surveyors, constructors, and erectors; and students of higher educational institutions in engineering geodesy departments. The author gives thanks to engineer I. I. Naymushin, former chief of construction of many large hydroelectric stations and to corresponding member of the Academy of Construction of Architecture A. F. Vasil'yev, former chief engineer of construction of these hydroelectric stations, for prolonged collaboration in the construction of many serious manufacturing problems. I am sincerely grateful to Professor A. S. Filonenko (institute of Engineers of Geodesy, Aerophotography, and Cartography) and docent Candidate of Technical Sciences A. M. Lebedev of the same institute for help and advice. I am also indebted to docent Ye. F. Belikov of Moskovskiy energeticheskiy institut for help in editing this book.

TABLE OF CONTENTS [abridged]:

Card 2/4

ZENTSOV, Andrey Stepanovich; TISTROVA, O.N., redaktor; LARIONOV, G.Ye., tekhnicheskiy redaktor

[High precision method of testing the horizontal level in installing large scale hydraulic turbines] Vysokotochnyi sposob proverki nivelirom porizontal'nosti pri montazhe krupnykh gidroagregatov. Moskva, Gos. energ. izd-vo, 1956. 39 p. (MLRA 10:2)
(Hydraulic turbines) (Leveling)

ZEMTSOV, A.S., inzh.

Improving the organization of engineering and surveying operations in the construction of large hydroelectric power stations. Energ. stroi. no.3:76-78 (13), 1960. (MIRA 14:9)

1. Bratskgesstroy.
(Hydroelectric power stations)
(Hydraulic engineering)

ZENTSOV, A.S., inzh.

Special hydraulic triangulations and height basis for the laying out and observation of the strains of the basic foundation structures of hydroelectric power systems. Energ.stroi. no.25:54-58 '61. (MIRA 15:4)

1. Stroitel'stvo Bratskoy gidroelektrostantsii.
(Hydroelectric power stations--Design and construction)

S/035/62/000/007/069/083
A001/A101

AUTHOR: Zentsov, A. S.

TITLE: Special hydrotechnical triangulations and vertical network for laying out and observing deformations of the principal constructions of hydro-engineering units (For discussion)

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 7, 1962, 11 - 12, abstract 7G84 (In collection: "Energ. str-vo", 25, Moscow-Leningrad, 1961, 54 - 58)

TEXT: The author proposes to establish a special classification for principal plan and vertical networks on construction sites of hydro-power stations, taking into account demands on precision of geodetic works in the process of designing, constructing and observing deformations in hydro-power stations. The proposed classification of triangulation networks is shown in Table 1, and leveling networks in Table 2. There are 9 references.

O. Klimov

[Abstracter's note: Complete translation]

Card 1/2

Special hydrotechnical...

Table 1

| Orders of hydrotechnical triangulation | Length of triangle sides (km) | Rms error in angle, sec | Maximum misclosure of triangle (sec) | Relative errors (aver) of measurements | |
|---|---|---|---|---|---|
| | | | | of sides (bases) | of most important side |
| II | 0.5 - 1.5 | 1.0 | 3.5 | 1 : 800,000 | 1 : 200,000 |
| III | 0.3 - 1.0 | 1.5 | 5.0 | 1 : 500,000 | 1 : 150,000 |
| IV | - | 2.0 | 7.0 | 1 : 150,000 | 1 : 70,000 |

Table 2

| Class of leveling | Rms errors per 1 km (mm) | |
|---|---|---|
| | random | systematic |
| 1 | ±1.0 | ±0.2 |
| 2 | 2.0 | 0.4 |
| 3 | 4.0 | 0.8 |

Card 2/2

ZENTSOV, M. S.

DOROFEYEVA, A.A., putevoy rabochiy; OBYDENKOVA, A.A., putevoy rabochiy; ZENTSOV, M.S., dorozhnyy master; KOCHETYGOV, A.I., brigadir puti; LITONIN, A.N., brigadir puti

Our Alekseii Stepanovich. Put' put.khoz. no.9:5 S '59.
(MIRA 12:12)

1. Moskovsko-Ryazanskaya distantsiya puti Moskovskoy dorogi.
(Moscow Province--Railroads--Maintenance and repair)

ZENTSOVA, A. I.

ZENTSOVA, A.I.; RUBINSHTEYN, M.I., redaktor.

[Cuba] Kuba. Pod red. M.I. Rubinshteina. Moskva, Gos. izd-vo geogr. lit-ry, 1952. 36 p. (MLRA 7:5)
(Cuba)

ZEMTSOVA, A.I.

Kuba [Cuba]. Moskva, Geografgiz, 1952. 37 p.

SO: Monthly List of Russian Accessions, Vol. 6, No. 2, May 1953

ZENUKOV, A.G.

Gas dynamic regulation of the jet nozzle of a turbojet engine. Izv. vys. ucheb. zav.; av.tekh. 2 no.1:55-64 '59.
(MIRA 12:3)

1.Kazanskiy aviatsionnyy institut, Kafedra aviatsionnykh lopatochnykh mashin.
(Airplanes--Turbojet engines)

39788

S/147/62/000/002/016/020
E191/E535

26.2124

AUTHOR: Zenukov, A.G.

TITLE: Contribution to the air cooling of gas turbine blades

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, no.2, 1962, 130-137.

TEXT: The development and preliminary tests are described concerned with an improved design of an air-cooled gas turbine rotor blade. The design is distinguished by the details of joining a hollow shell constituting the external surface of the blade to the load-carrying core, which is integral with the blade root and is itself hollow to permit the passage of air. It is an essential feature of the new design that a clearance is maintained all round the core between it and the shell throughout the working length of the blade. The shell is attached to the core against the centrifugal force by a butt strap at the tip, which is welded to the core or formed in it by stamping after the fitting of the shell. The cooling air is fed through holes in the root into the cavity of the core, from which it emerges through holes in the leading edge of the core towards the inside of the leading edge

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of the shell. Flowing in the clearance between the core and the shell tangentially along the profile, the air is discharged into the main stream through apertures near the trailing edge of the shell. In 1949, tests were carried out at the Laboratoriya turbomashin (Turbo-Machine Laboratory) of the KAI with a similar design of air-cooled blades, in which, however, contact was maintained between the shell and the embossed core along various lines. The core took part in the heat exchange between the shell and the air. Effective cooling of the shell could be obtained but only at the expense of a higher core temperature and a non-uniform temperature distribution. In the new design, the lowest core temperature is achieved and a smooth temperature distribution prevents warping and distortions. The manufacture of the new type of blade is easier. Moreover, the shell continuously operates under compressive stresses. Even the small gain in high-temperature strength obtained under compressive load can greatly add to the safety of the blade assembly. Practical tests were carried out to determine the structural stability of profiled shells in compression. Blade lengths between 50 and 200 mm and blade chords between 30 and 40 mm were included in over 200 tests

of shells, 0.4 - 0.5 mm thick made of several heat-resisting and other ferrous materials. It was shown that loss of stability did not constitute a separate strength criterion compared with high-temperature strength. Effective cooling of the shell by over 200°C could be obtained compared with the uncooled blade and the core could be cooled down to 200°C (at a gas temperature of 800°C). There are 8 figures.

ASSOCIATION: Kazanskiy aviatsionnyy institut, Kafedra turbomashin (Kazan' Aviation Institute, Department of Turbomachines)

SUBMITTED: November 30, 1961

X

ZENUKOV, A.G.

Design methods and results of experimental investigation of a turbine blade with air cooling. Izv.vys.ucheb.zav.; av.tekh. 6 no.3:57-69 '63. (MIRA 16:10)

ACCESSION NR: AP4033045 S/0147/64/000/001/0096/0104

AUTHOR: Zenukov, A. G.

TITLE: Differential equations for the temperature state of a shrouded blade and methods for their solution

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 1, 1964, 96-104

TOPIC TAGS: differential equation, temperature, blade, shrouded blade, blade shape, heat resistance, thermal conductivity, temperature field

ABSTRACT: The article is in two parts: the first deals with the derivation of the equations, the second with an approximate method for their solution. The coordinate axes are selected in accordance with the calculation diagram (Figure 1 of the Enclosure): axis z is in the radial direction; x coincides with the external contour of the profile. The following fundamental differential equations are derived in the first part of the article: 1) A differential equation for the temperature state of the envelope, disregarding radiation heat and temperature change throughout the thickness of the envelope; 2) An equation describing the temperature state of the shaft core; 3 & 4) Equations describing the heating of the air in the first and second contours. These equations represent a closed system, through the

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ACCESSION NR: AP4033045

solution of which it is possible to determine the functions of practical interest; namely, the temperature of the envelope, the temperature of the shaft core (Figure 2 of the Enclosure) and the temperatures of the air in the first and second contours (Figures 3 and 4 of the Enclosure). All terms of the equations are complex variable functions, depending on one another and on the coordinates. The authors note that a solution of the system of equations in a general form is impossible through conventional mathematical techniques; however, in the majority of cases of practical importance there are sufficient particular solutions (for example, by disregarding the thermoconductance of the envelope). For more accurate computations, when there is a need to determine the complete temperature fields of the blade, the authors propose the following method: find a particular solution of the equations, on the premise that the functions change in one direction only; then find the solution for the change of functions in the other direction. In the present article, the authors solved the equations for the following particular case: 1) Thermoconductivity along the profile is infinitely great; that is, thermoresistance is disregarded; 2) Within the sections, into which the blade is broken down, the heat transfer factors from the gas and air in the second contour, as well as the temperatures of the gas, envelope, and air in that contour, are considered constant; 3) A case is considered in which the air is fed (to the second contour)

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ACCESSION NR: AP4033045

through a series of apertures (this being the most convenient): 4) The effect of radiant heat transfer is disregarded; 5) The absence of air reflow between adjacent sections is assumed. In order to verify the methods developed, calculations were made of several test conditions of experimental blades. The results of the comparison indicated satisfactory agreement of the theoretical and experimental data. Orig. art. has: 5 figures and 31 formulas.

ASSOCIATION: None

| | | |
|---|---|---|
| SUBMITTED: 27Apr63 | DATE ACQ: 11May64 | ENCL: 04 |
| SUB CODE: PR, | NO REF SOV: 004 | OTHER: 000 |

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ACCESSION NR: AP4033045

ENCLOSURE: 01

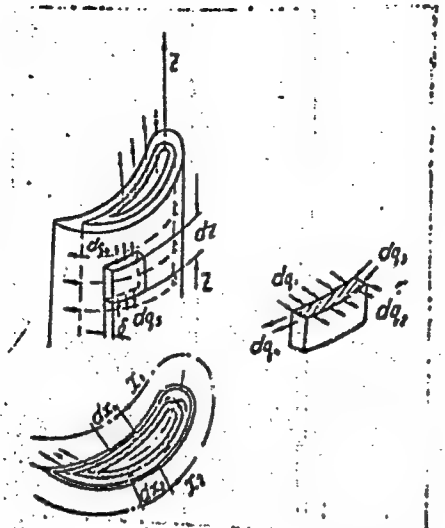

Fig. 1 - Calculation diagram

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ACCESSION NR: AP4033045 ENCLOSURE: 02

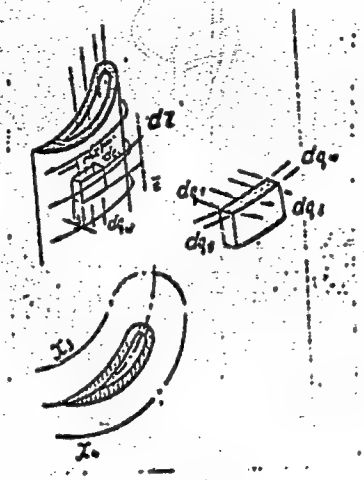

Fig. 2 - Determination of the heat balance of the core shaft.

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ACCESSION NR: AP4033045

ENCLOSURE: 03

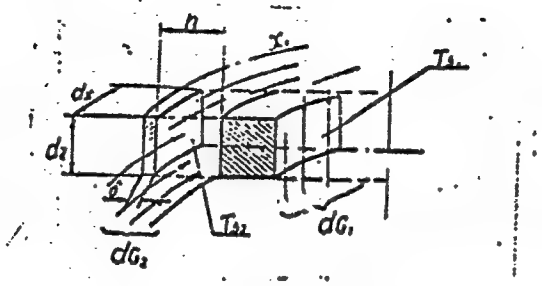


Fig. 3 - Determination of the heating of the air in the second contour.

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ACCESSION NR: AP4033045

ENCLOSURE: 04

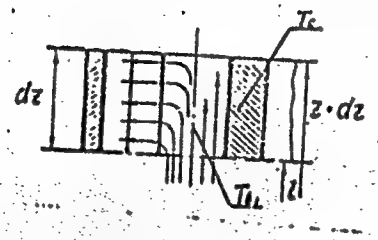



Fig. 4 - Calculation diagram for the determination of the air heating in the first contour.

Card 7/7

ZENUKOV, A.G.

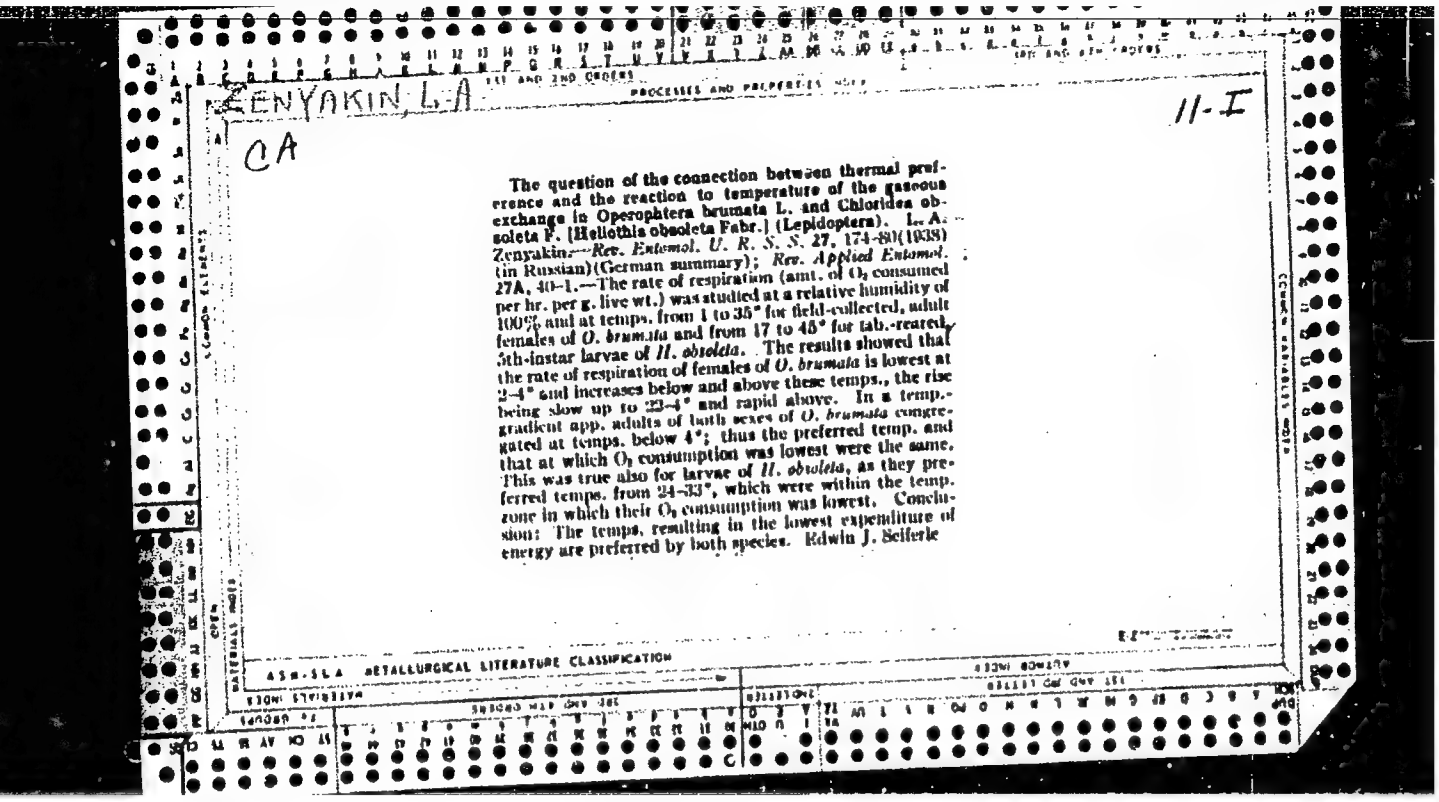
Investigating the stability of the shell of a sleeve-type double-cavity blade in an air-cooling system. Izv. vys. ucheb. zav.; av. tekh. 8 no.1:35-45 '65. (MIRA 18:3)

ZENUKOV, A.G.

Differential equations for the temperature state of an air-cooled blade and methods for their solution. Izv.vys.ucheb.zav.;av.tekh. 7 no. 1:96-104 '64. (MIRA 17:5)

ZENUKOV, A.G.

Determining temperature distribution along the profile of a sleeve blade. Izv. vys. ucheb. zav.; av. tekh. 7 no.3:110-116 '64.
(MIRA 17:9)



ZENYAKIN, L.A.

CA

11-I

The question of the connection between thermal preference and the reaction to temperature of the gaseous exchange in Operophtera brumata L. and Chloridea obsoleta F. [Heliothis obsoleta Fabr.] (Lepidoptera). L. A. Zenyakin.—*Rev. Entomol. U. R. S. S.* 27, 174-80(1938) (in Russian)(German summary); *Rev. Applied Entomol.* 27A, 40-1.—The rate of respiration (amt. of $O_2$ consumed per hr. per g. live wt.) was studied at a relative humidity of 100% and at temps. from 1 to 35° for field-collected, adult females of *O. brumata* and from 17 to 45° for lab.-reared, 5th-instar larvae of *H. obsoleta*. The results showed that the rate of respiration of females of *O. brumata* is lowest at 2–4° and increases below and above these temps., the rise being slow up to 23–4° and rapid above. In a temp.-gradient app. adults of both sexes of *O. brumata* congregated at temps. below 4°; thus the preferred temp. and that at which $O_2$ consumption was lowest were the same. This was true also for larvae of *H. obsoleta*, as they preferred temps. from 24–33°, which were within the temp. zone in which their $O_2$ consumption was lowest. Conclusion: The temps. resulting in the lowest expenditure of energy are preferred by both species. Edwin J. Seiferle

PAVLOVSKIY, Ye.N., akademik, glavnyy red.; GILYAROV, M.S., otv.red.; LORKH, A.G., red.; MEL'NIKOV, N.N., red.; FEDOTOV, D.M., red.; YAKOVLEV, B.V., red.; ZENYAKIN, L.A., red.; SABLINA, T.B., red.izd-va; VOLKOVA, V.V., tekhn.red.

[Transactions of the International Conference on the Study of the Colorado Beetle and the Development of Measures for its Control] Trudy Mezhdunarodnogo soveshchaniia po izucheniiu koloradskogo zhuka i razrabotke mer bor'by s nim. Moskva, Izd-vo Akad.nauk SSSR, 1959. 329 p. (MIRA 12:8)

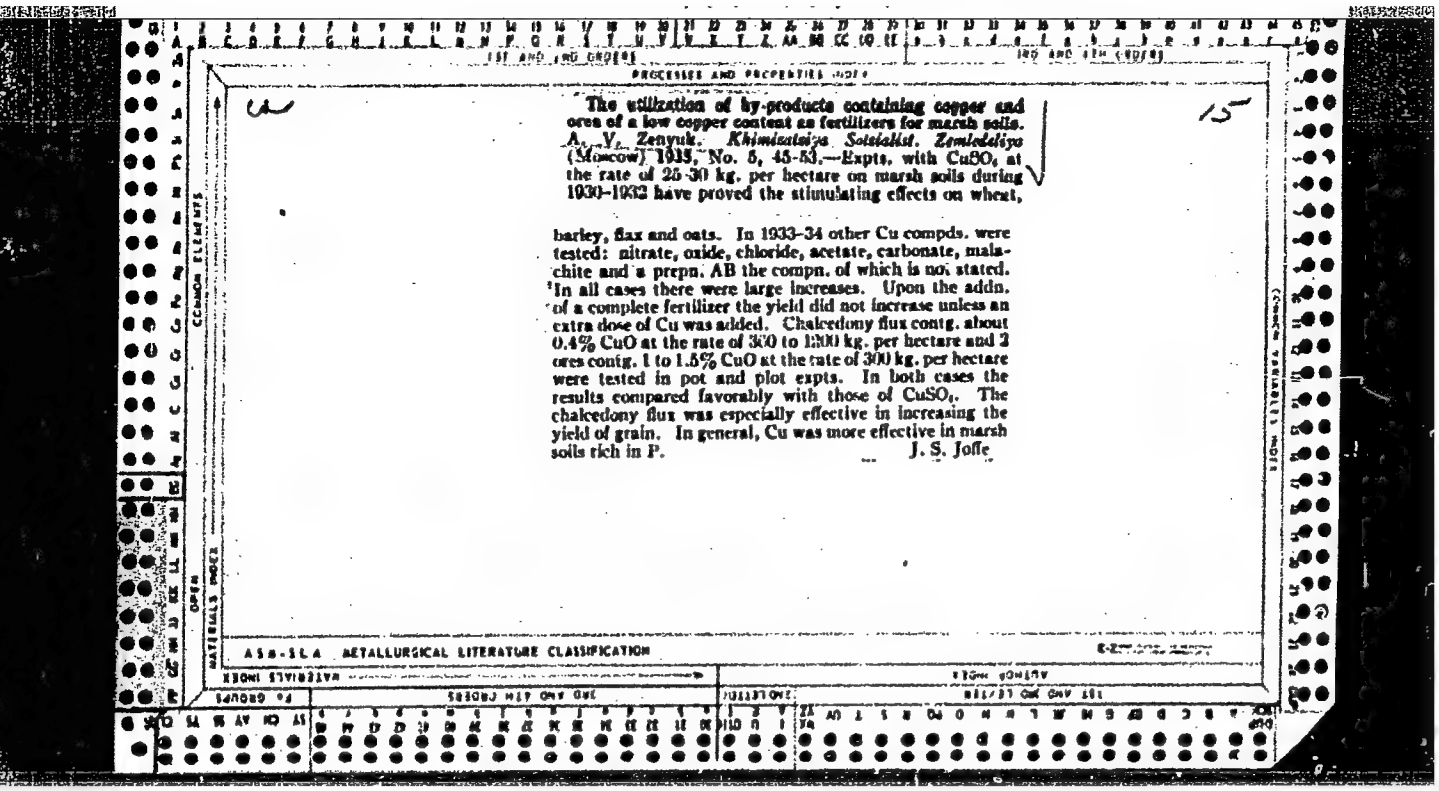
1. Mezhdunarodnoye soveshchaniye po izucheniyu koloradskogo zhuka i razrabotke mer bor'by s nim, 1956. 2. Mezhduvedomstvennaya metodicheskaya komissiya po koloradskomu zhuku. Akademiya nauk SSSR, Moskva (for Gilyarov). 3. Nauchnyy institut udobreniy i insektofungitsidov, Moskva (for Mel'nikov). (Potato beetle--Congresses)

ZENYAKIN, L. A., KOZHEVINIKOVA, G. V.

Insecticides

Dusting seeds of grain crops with hexachloran as a means of controlling the wheat wireworm. Sov. agron. 10 no. 8, 1952

Monthly List of Russian Accessions, Library of Congress, September 1952. Unclassified.



PROCESSES AND PROPERTIES INDEX

**The utilization of by-products containing copper and ores of a low copper content as fertilizers for marsh soils.** A. V. Zenyuk. *Khimizatsiya Sotsialist. Zemledeliya* (Moscow) 1935, No. 5, 45-53.—Expts. with $CuSO_4$ at the rate of 25-30 kg. per hectare on marsh soils during 1930-1932 have proved the stimulating effects on wheat, barley, flax and oats. In 1933-34 other Cu compds. were tested: nitrate, oxide, chloride, acetate, carbonate, malachite and a prepn. AB the compn. of which is not stated. In all cases there were large increases. Upon the addn. of a complete fertilizer the yield did not increase unless an extra dose of Cu was added. Chalcedony flux contg. about 0.4% CuO at the rate of 300 to 1200 kg. per hectare and 2 ores contg. 1 to 1.5% CuO at the rate of 300 kg. per hectare were tested in pot and plot expts. In both cases the results compared favorably with those of $CuSO_4$. The chalcedony flux was especially effective in increasing the yield of grain. In general, Cu was more effective in marsh soils rich in P. J. S. Joffe

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

ZENYUK, F.I.

Use of turboblowers for carbon dioxide. Sakh.prom. 34 no.3:39-40 Mr 1960 (MIRA 13:6)

1. Chernovitskiy sakhsveklotrest.
(Sugar manufacture) (Turboblowers)

ZENYUK, F.I.

Mechanization of bagasse loading operations. Sakh. prom. 36 no.12:17-18 D '62. (MIRA 16:6)

1. Chernovitskiy trest sakharnoy promyshlennosti.
(Sugar machinery)

ZENYUK, P.A.

Use of popular science literature and fiction in teaching physical geography. Vop.geog. no.37:66-69 '55. (MLRA 8:12)
(Geography--Study and teaching) (Kolosovskii, Nikolai Nikolaevich, 1891-1954)

ZENYUK, P. A.

Geography - Study and Teaching

Exchange of practical knowledge and skill in geography. Geog. v shkole, No. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

KOSINSKIY, Iosif Alekseyevich; ZENYUK, T.N., red.

[Rainbow on film; book on color photography] Raduga na plenke; kniga o tsvetnoi fotografii. Leningrad, Lenizdat, 1965. 142 p. (MIRA 18:12)